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Visual Resource Management Program



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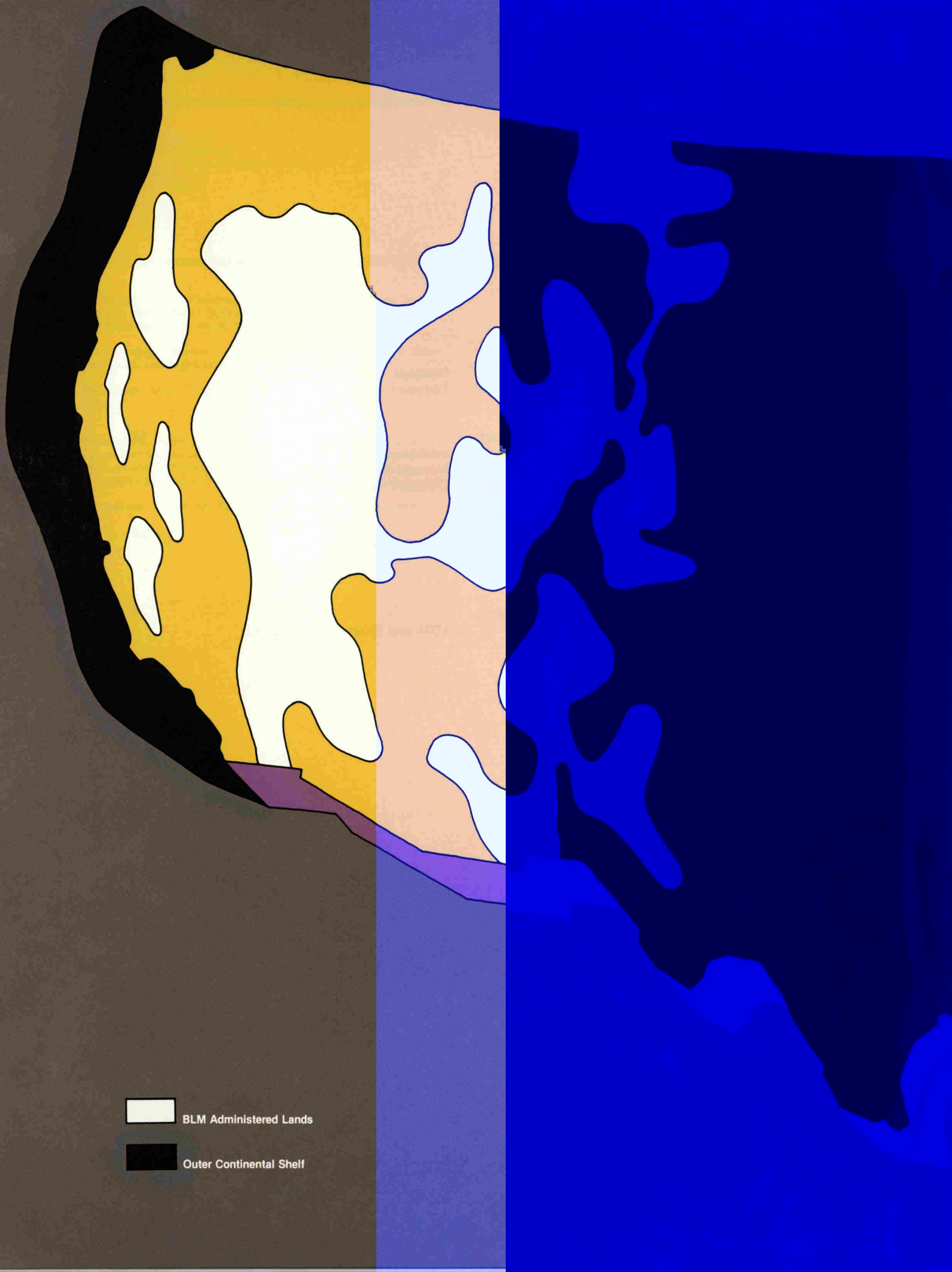
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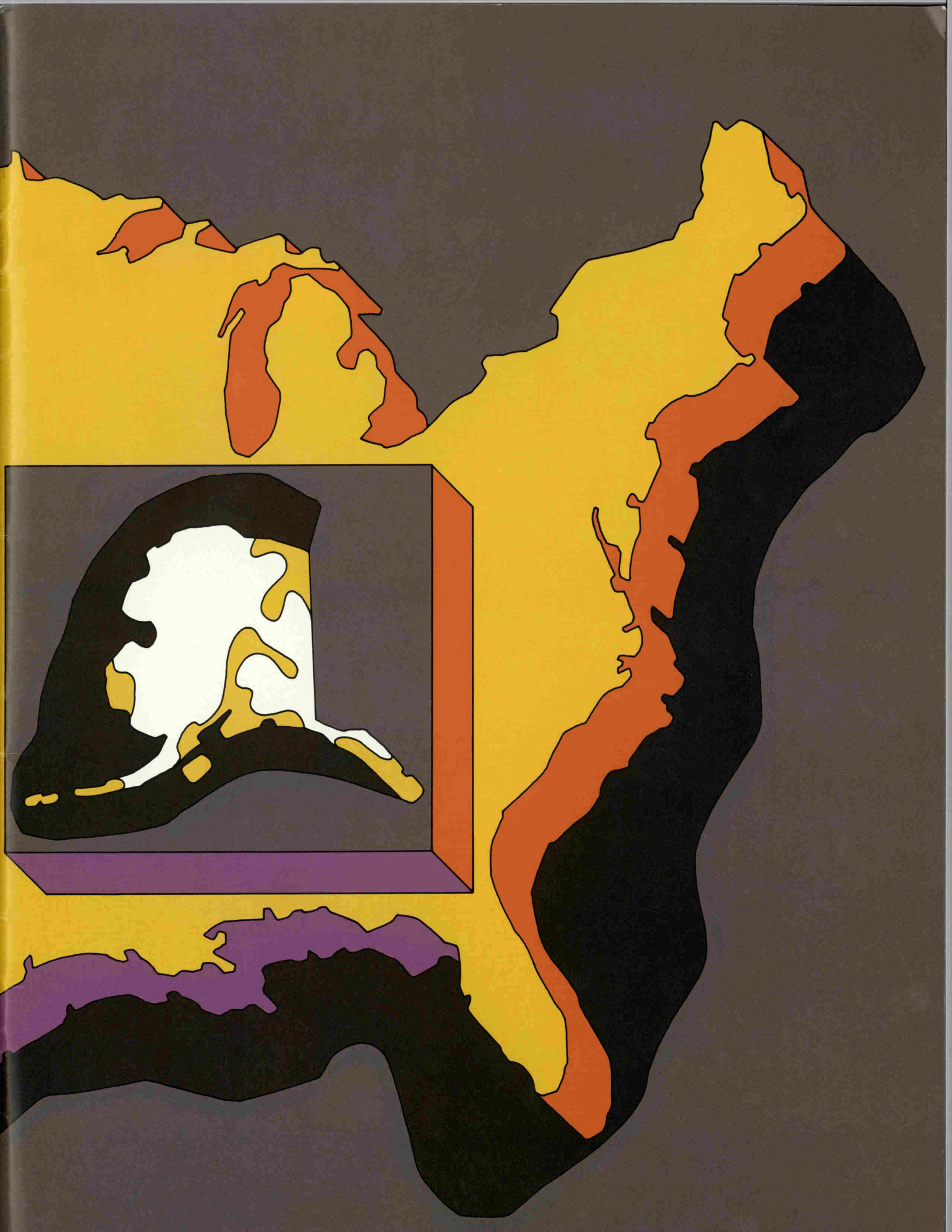
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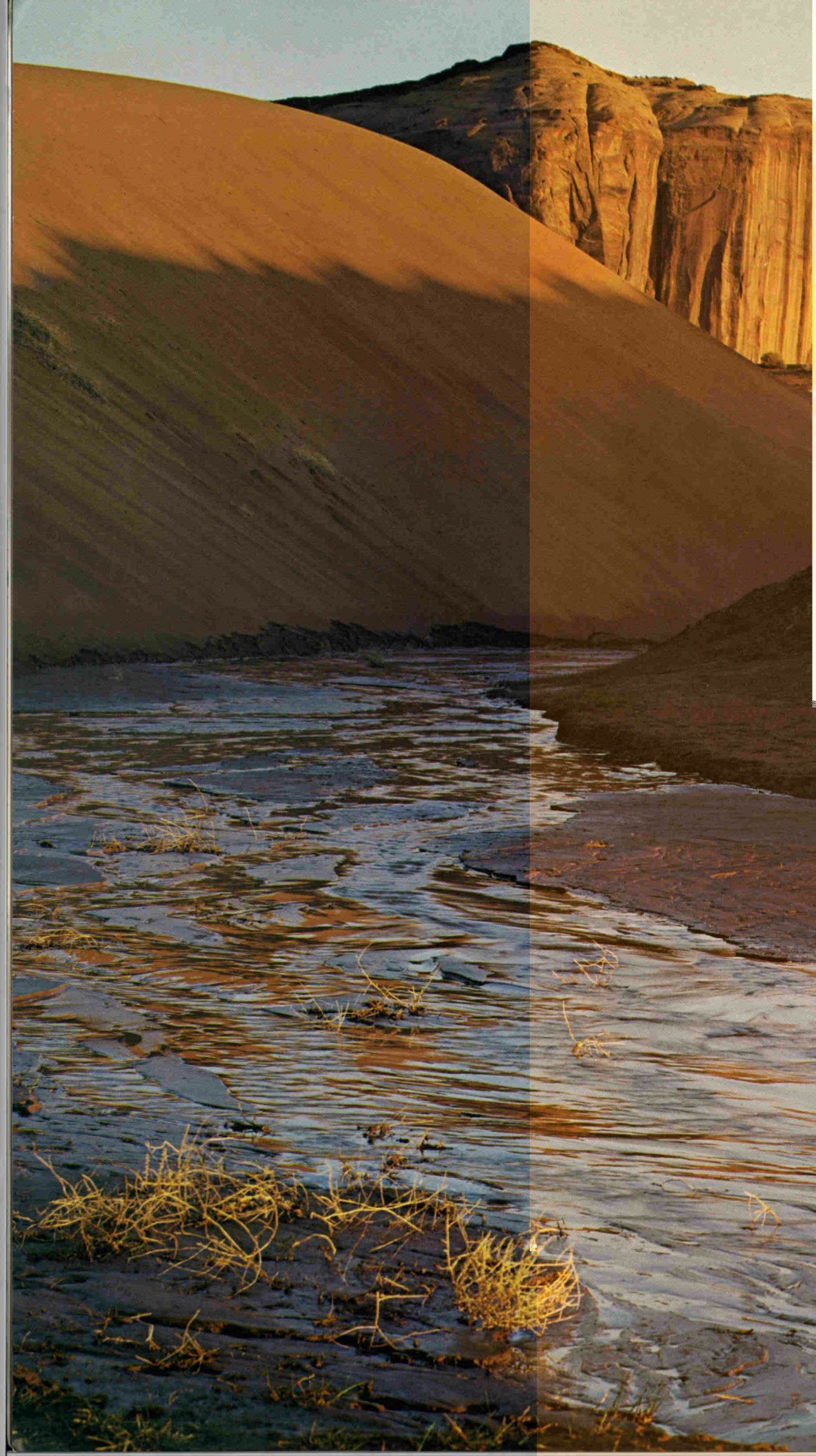


BLM Administered Lands



Outer Continental Shelf





spective

ty of the visual environment has become
gly important to the American public. The
f Land Management is committed to
g visual resources on an equal basis with all
ources as it continues to put public land to
e use.

Resource Management (VRM) has dual
purposes: to manage the quality of the
vironment, and to reduce the visual impact
pment activities, while maintaining
ness in all Bureau resource programs. VRM
ifies scenic areas that warrant protection
pecial management attention. It is a specific
at can be mapped and incorporated into
anning for projects ranging from siting
ion lines to harvesting timber.

ication is an introduction to the VRM
its intended use is to familiarize decision
nd use planners, and designers both inside
de of the Bureau with VRM and its benefits.

New Directions

Managing the visual aspects of natural landscape is particularly important for the Bureau of Land Management because most activities taking place on Bureau lands involve some degree of alteration. The Bureau's responsibilities for visual management are spelled out in recent Federal legislation.

The Federal Land Policy and Management Act of 1976 (FLPMA), often referred to as the "organic" act for the Bureau, requires that:

public lands be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resources, and archaeological values; that, where appropriate, certain public lands will preserve and protect in their natural condition and habitat for fish and wildlife and domestic animals; and that will provide for outdoor recreation and human occupancy and use, . . .

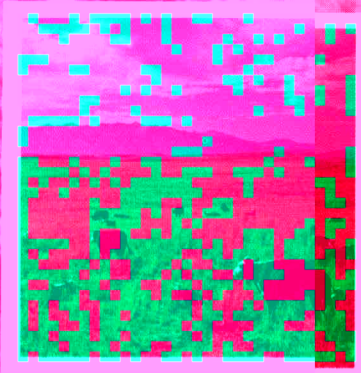
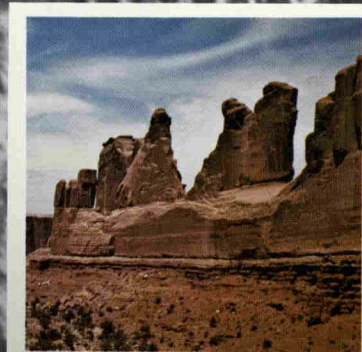
The act also states that the Secretary of the Interior shall:

prepare and maintain on a continuing basis an inventory of all public lands and their resource and other values (including but not limited to outdoor recreation and scenic values).

The Act, for the first time, places *scenic* resources on an equal basis with other resources. It also makes inventorying and managing scenic and other environmental values an explicit criterion that must be applied throughout the land management activities of the Bureau.

This same law also places a new emphasis on the role of land use planning by requiring that resource management plans:

give priority to the designation and protection of areas of critical environmental concern. The



be given appropriate consideration
making along with economic and
considerations.

and interdisciplinary approach
ensure the integrated use of the
social sciences and the environ-
mental arts in planning and decision-
making may have an impact on man's
life.

Of these Federal laws are their
provisions on environmental and scenic
resources require that the long-term and
sustained values of all resource
areas receive equal consideration.



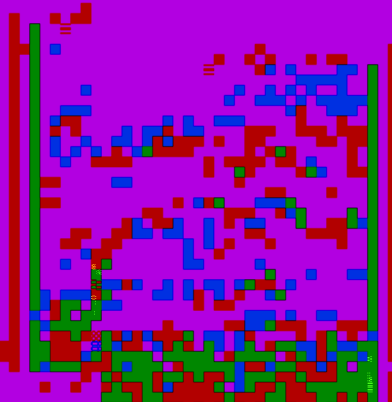


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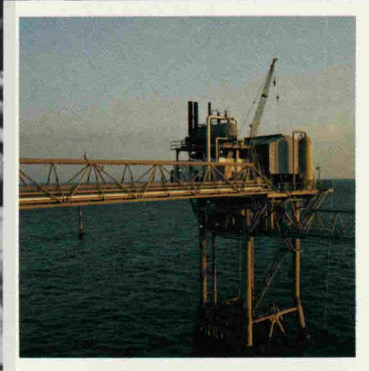
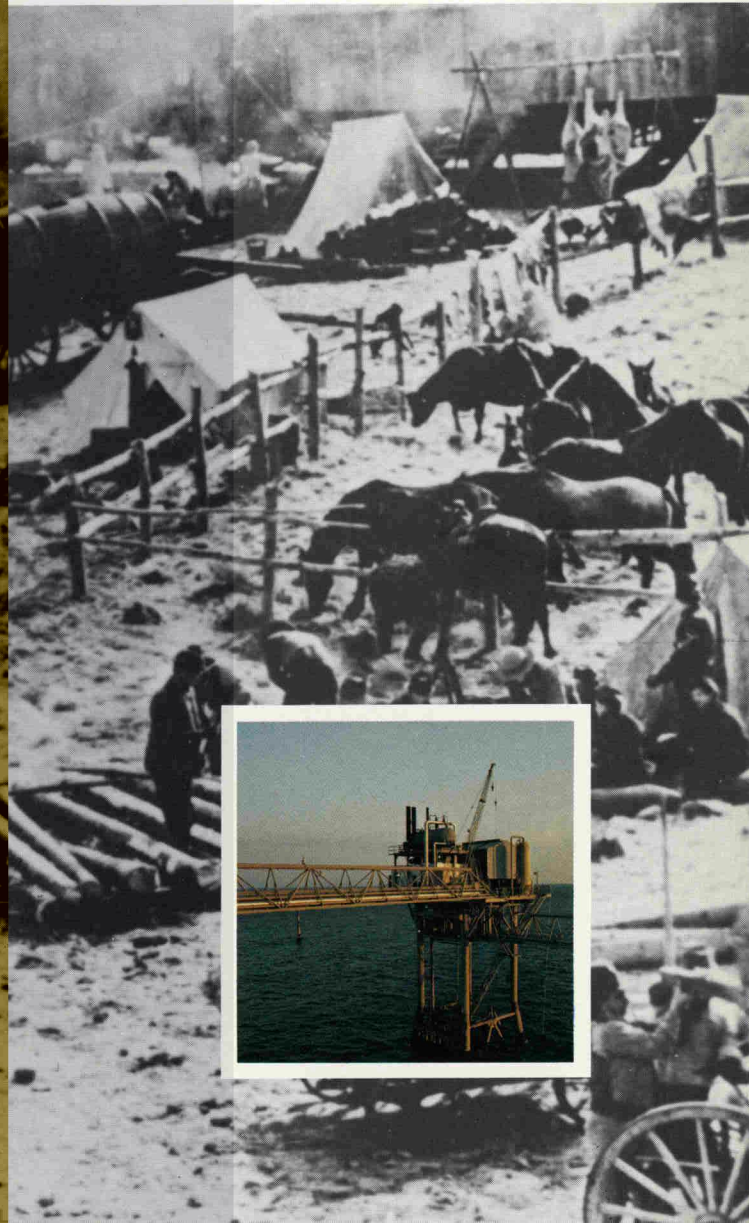
land are not permanently impaired. Managing vast and varied resources under this mandate is a complex undertaking, particularly since the priorities set for one management activity often conflict with the priorities set for another.

The Bureau and Visual Resources

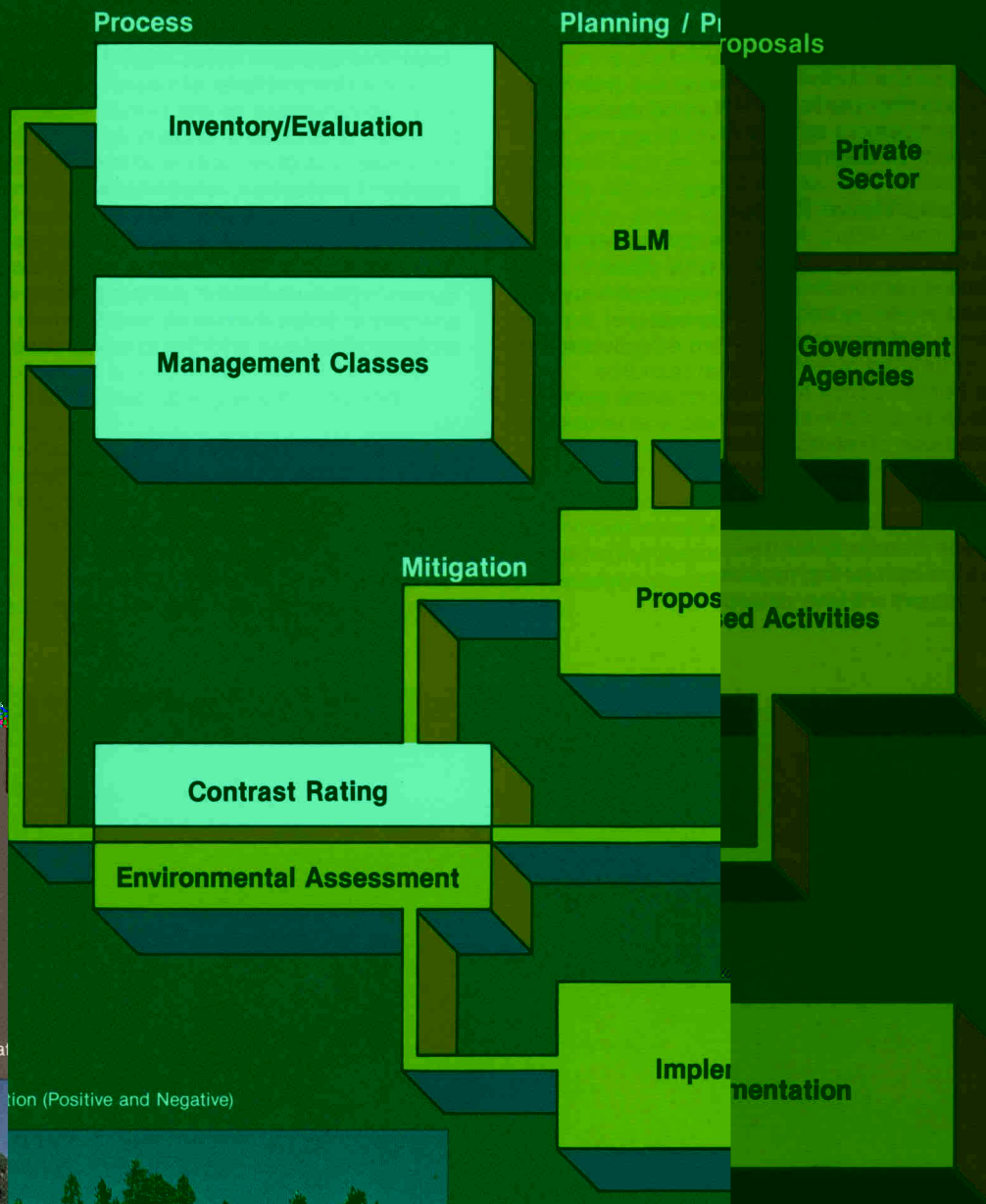
The Bureau of Land Management is concerned with managing visual resources equally with other resources and attaining acceptable levels of visual impact without unduly reducing commodity production or limiting overall program effectiveness. It is therefore Bureau policy that visual resource considerations be included in environmental assessments, in land use planning decisions, and in the implementation of resource projects.

Since it was put into effect in 1975, the VRM program has helped set standards for transmission line location, timber harvesting, recreation development, range management, mining activities, and highway placement.

Because the scenic value and management objectives of public lands vary, it is not practical to provide a uniform level of visual management for all areas administered by the Bureau. The agency has therefore developed a system for evaluating the visual resources of a given area and for determining what degree of protection, rehabilitation, or enhancement is desirable and possible. This Bureau-wide system provides an inter-disciplinary approach to managing visual resources. The integration of VRM into the Bureau's procedures for planning and environmental analysis ensures maximum coordination between a proposed land use and the existing visual conditions.



System



Cultural Modification

tion (Positive and Negative)



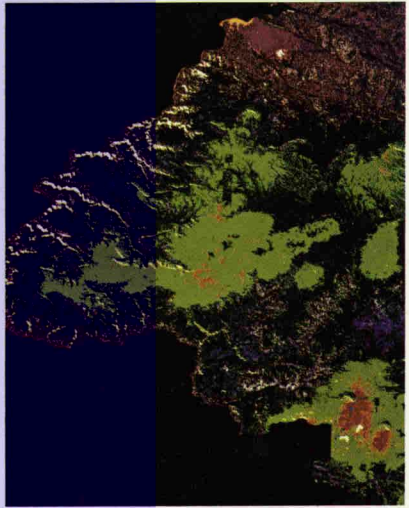
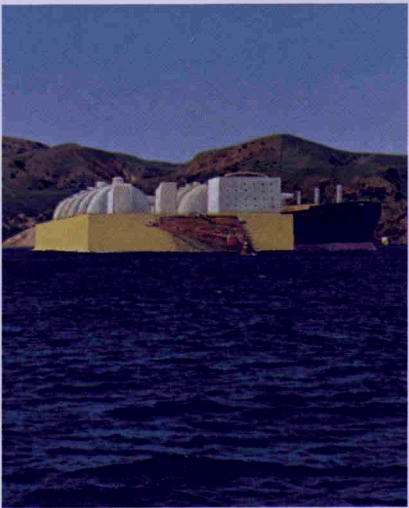
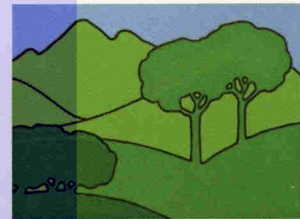
Simulated Activity

Second, when development is proposed, by the Bureau itself (through its planning process), or by other agencies or the private sector, the degree of contrast between the proposed activity and the existing landscape is measured (**Contrast Rating**).

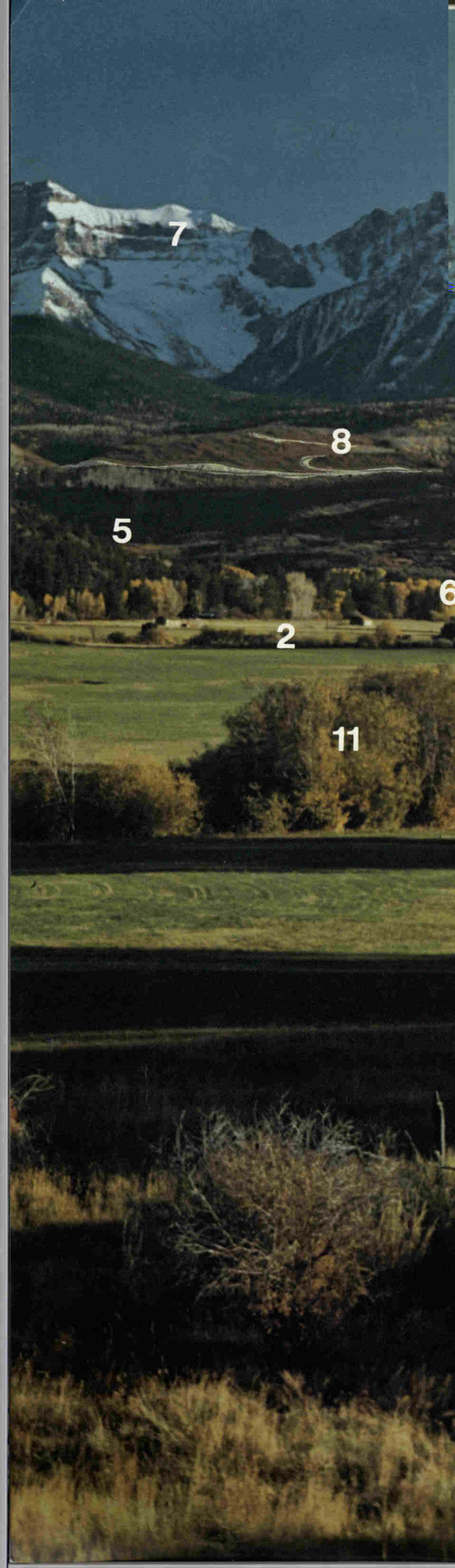
These combined steps constitute the VRM process, which has a number of applications. The process can help make the visual impact of proposed activities more acceptable while these activities are still in the design stage. Graphic simulations of proposed activities help illustrate the extent of potential visual impact. Modifications may be suggested. During project construction, monitoring assesses actual visual impact. In both instances, VRM plays a support role.

Figure 1 consists of two panels. The left panel, labeled 'Color', shows a landscape with a red mountain, a brown hill, and a green foreground. The right panel, labeled 'Texture', shows a landscape with green hills, a blue sky, and a body of water with small figures. Both panels are divided vertically by a white line.

Texture



Simulated Activity



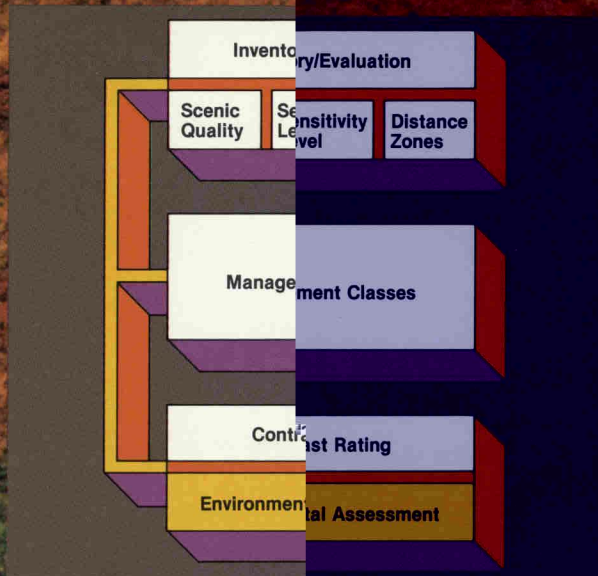
Terms

To understand how the Bureau of Land Management manages visual resources, it is important to understand how some key terms are used in the VRM system.

Many of the terms illustrated and briefly defined here are drawn directly from the visual arts. Others have been modified somewhat, given special meanings by their VRM context. All are basic—the “program language” of VRM.

- | | | |
|----|------------------------------|--|
| 1 | Form | The mass or shape of an object, which appears unified; often defined by edge, outline, and surrounding space. |
| 2 | Line | The path that the eye follows when perceiving abrupt differences in form, color, or texture. In the landscape, ridges, skylines, structures, changes in vegetation, or individual trees and branches may be perceived as line. |
| 3 | Color | The property of reflecting light of a particular wavelength that enables the eye to differentiate otherwise indistinguishable objects. |
| 4 | Texture | The visual manifestation of the interplay of light and shadow created by variations in the surface of an object. |
| 5 | Harmony | The combination of parts into a pleasing or orderly whole; congruity; a state of agreement or proportionate arrangement of form, line, color, and texture. |
| 6 | Variety | The condition of having differentiated parts; the absence of monotony or sameness. |
| 7 | Contrast | The effect of a striking difference in form, line, color, or texture of a landscape's features. |
| 8 | Cultural Modification | Any man-made change in land, waterform or vegetation (roads, bridges, buildings, fences); the addition of a structure which creates a visual contrast to the natural character of a landscape. A <i>negative</i> cultural modification is disharmonious with the existing scenery. A <i>positive</i> cultural modification can actually complement and improve a particular scene by adding variety and harmony. |
| 9 | Back Lighting | The light source comes from behind the object viewed. The visible face of the object is generally in shadow and its edge highlighted. |
| 10 | Front Lighting | The light source comes from behind the observer and falls directly on the object viewed. There is little shadow effect. |
| 11 | Side Lighting | The light source comes from one side of the object viewed. This is the light considered most effective for evaluating visual contrast. |

Process



Inventory/Evaluation

The Inventory/Evaluation process in the VRM consists of three steps: assessment of the visual quality of the landscape, the sensitivity of the people to change(s) in the landscape, and the viewing distance. Although the details of the evaluation are intricate, the process itself is straightforward.



Scenic Quality

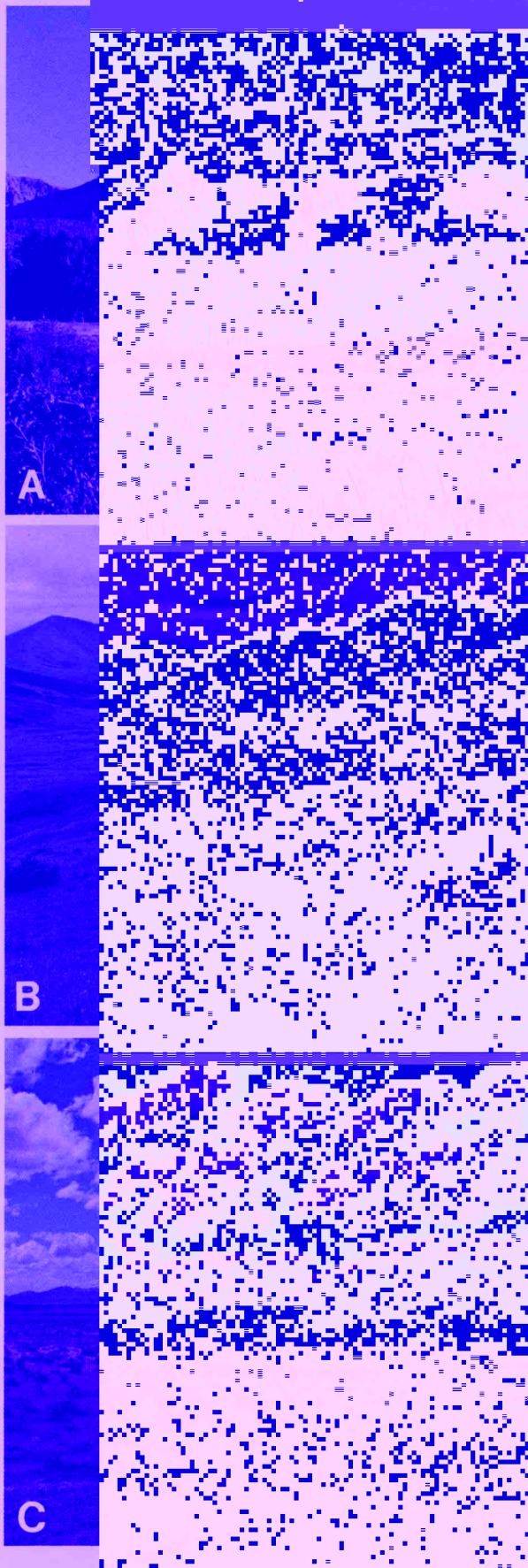
Scenic Quality is perhaps best described as the overall impression retained after driving through, walking through, or flying over an area of land. In the VRM process, rating Scenic Quality requires a brief description of the existing scenic values in a landscape. This step identifies (1) areas that must be protected, (2) opportunities for enhancement and rehabilitation, and (3) opportunities for improvement by reducing the contrast of cultural modifications.

When inventoried, an area is first divided into sub-units that appear homogeneous, generally in terms of landform and vegetation. Each area is then rated by seven Key Factors: *landform, vegetation, water, color, influence of adjacent scenery, scarcity, and cultural modification*. A standardized point system assigns great, some, or little importance to each factor. The values for each category are calculated and, according to total points, three Scenic Quality Classes are determined and mapped:

Class A Areas that combine the most outstanding characteristics of each rating factor (19-33 points).

Class B Areas in which there is a combination of outstanding features and some that are fairly common to the physiographic region (12-18 points).

Class C Areas in which the features are fairly common to the physiographic region (0-11 points).

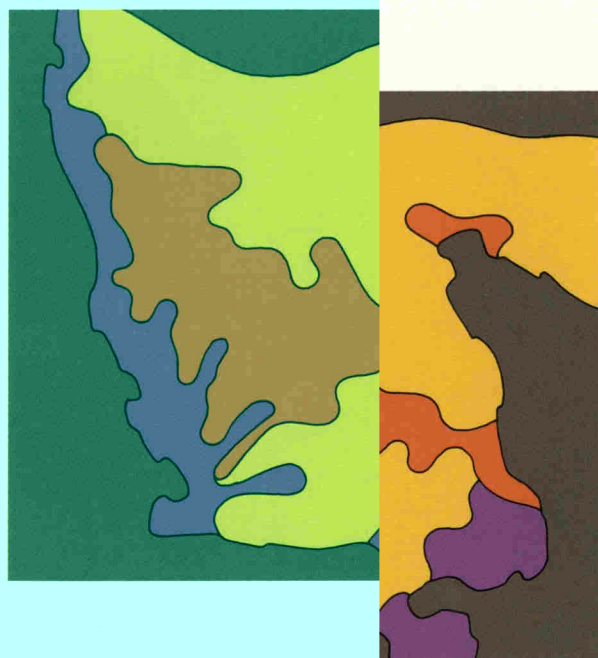


Scenic Quality Inventory/Evaluation Rating Criteria and Score

Landform	Vegetation	Water	Color	Adjacent Scenery	Scarcity	Cultural Modifications
High vertical relief such as prominent cliffs, spires or massive rock outcrops; or severe surface variation or highly eroded formations including major badlands or dune systems; or detail features dominant and exceptionally striking and intriguing such as glaciers. 5	A variety of vegetative types in interesting forms, textures, and patterns 5	Clear and clean appearing, still, or cascading white water, any of which are a dominant factor in the landscape. 5	Rich color combinations, variety or vivid color; or pleasing contrasts in the soil, rock, vegetation, water or snow fields. 5	Adjacent scenery greatly enhances visual quality. 5	One of a kind, unusually measurable; or very within region, consistent changed; or exceptional wildflowering. 5	Free from esthetically undesirable or discordant sights and influences; or modifications add favorably to visual variety. 2
Steep canyons, mesas, buttes, cinder cones and drumlins; or interesting erosional patterns or variety in size and shape of landforms; or detail features present and interesting though not dominant or exceptional. 3	Some variety of vegetation, but only one or two types. 3	Flowing or still, but not dominant in the landscape. 3	Some intensity or variety in colors and contrast of the soil, rock and vegetation, but not a dominant scenic element. 3	Adjacent scenery moderately enhances overall visual quality. 3	Distinctive, though somewhat similar to others within region. 3	Scenic quality is somewhat depreciated by inharmonious intrusions, but not so extensively that they are entirely negated; or modifications add little or no visual variety to the area. 0
Low, rolling hills, foothills or flat valley bottoms. Interesting, detailed landscape features few or lacking. 1	Little or no variety or contrast in vegetation. 1	Absent, or not noticeable. 0	Subtle color variations, contrast or interest; generally muted tones. 1	Adjacent scenery has little or no influence on overall visual quality. 0	Interesting within setting, but fairly common within region. 0	Modifications are so extensive that scenic qualities are mostly nullified or substantially reduced. .4

Scenic Quality

- A Scenery
- B Scenery
- C Scenery



Sensitivity Levels

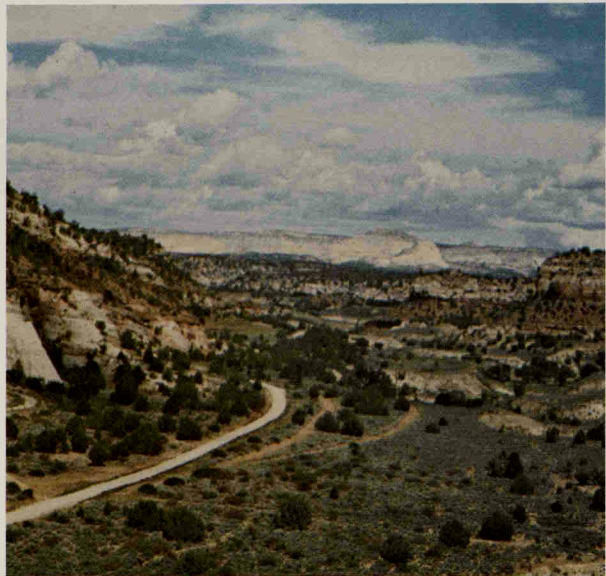
Although landscapes do have common elements that can be measured, there is obviously still a subjective dimension to landscape aesthetics. Each viewer brings perceptions formed by individual influences: culture, visual training, familiarity with local geography, personal values.

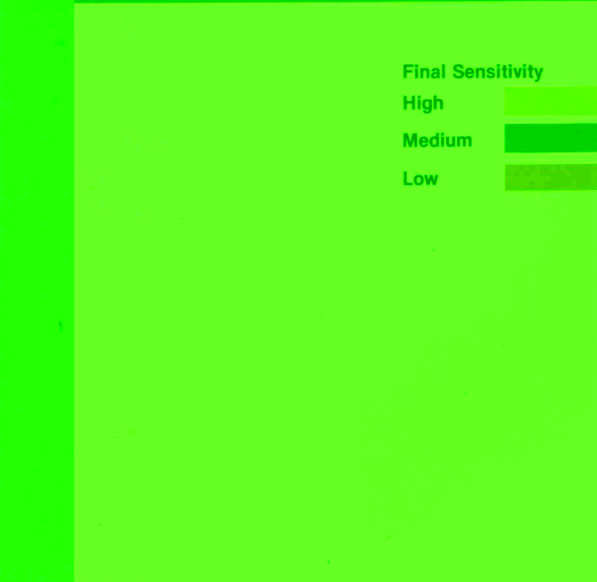
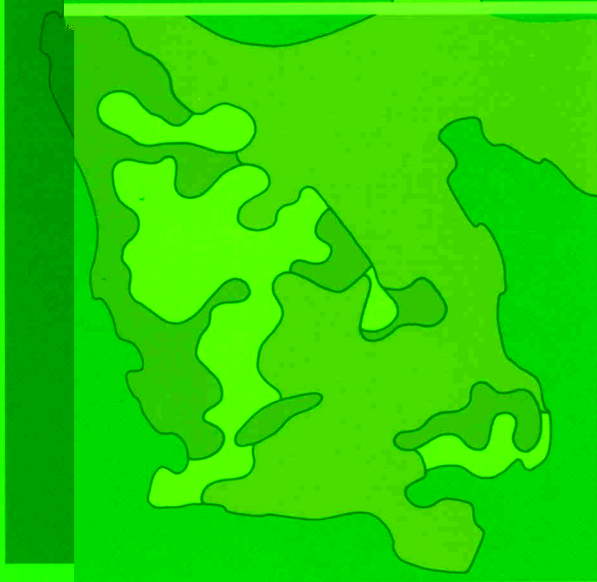
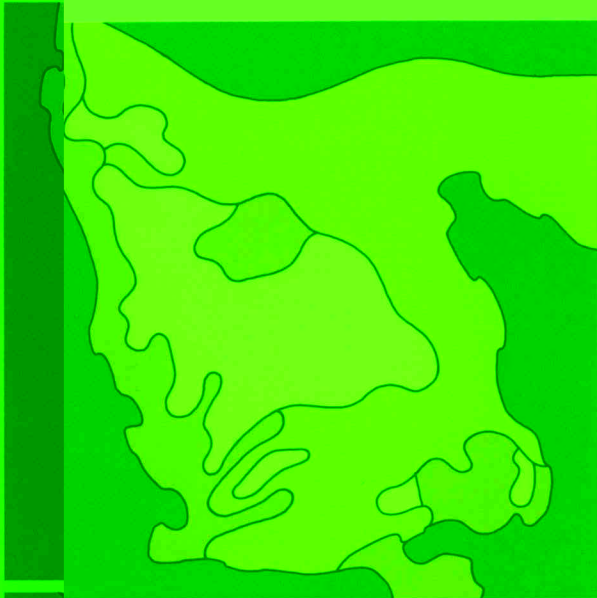
To measure regional and individual attitudes in the evaluation of a landscape, visual sensitivity is determined in two ways:

Use Volume Frequency of travel through an area (by road, trail, river) and use of that area (for recreation, camping, events) are tabulated. The area is then assigned a *high, medium, or low* rating according to predetermined classifications.

User or Public Reaction Public groups are familiarized with the area (if necessary) and asked to respond to activities that will modify that landscape. The concern they express about proposed changes in scenic quality is also rated *high, medium, or low*.

The various combinations of Use Volume and User Reaction for each area are rated by a matrix to an overall Sensitivity Rating of *high, medium, or low*. A map is then developed that illustrates final Sensitivity Levels.





Final Sensitivity
 High
 Medium
 Low

Sensitivity Level Matrix

Sensitivity	High				Medium			Low	
User Attitude	H	H	M	H	L	M	M	L	L
User Volume	H	M	H	L	H	M	L	M	L

User Attitude
 High
 Medium
 Low

User Volume
 High
 Medium
 Low



Distance Zones

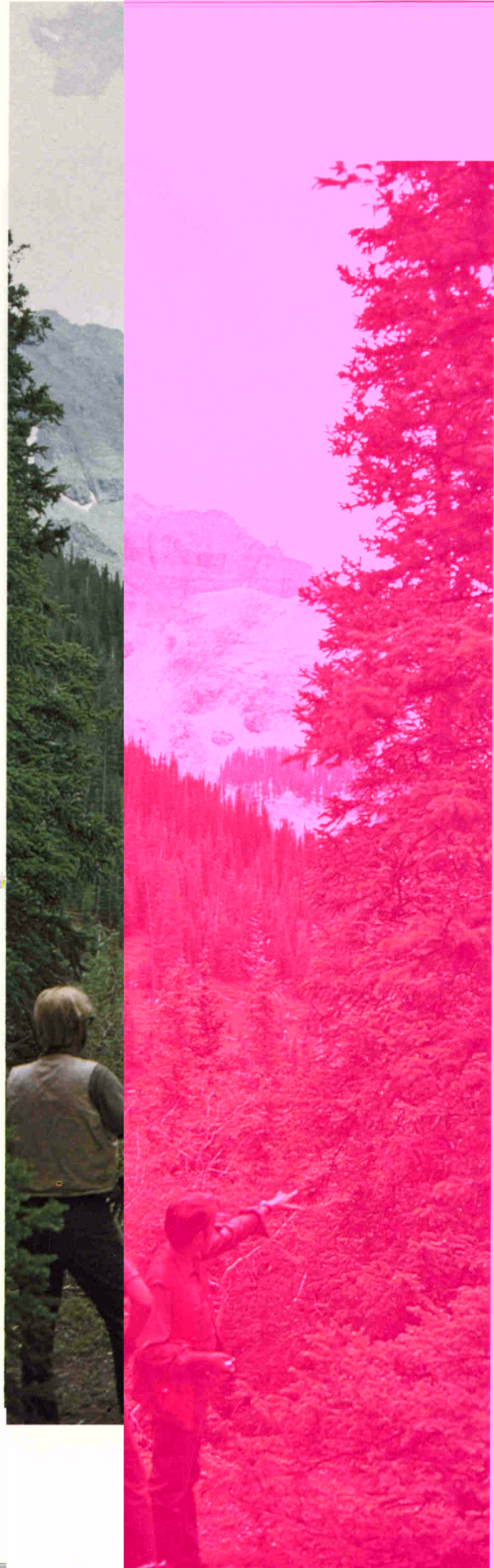
The visual quality of a landscape (and user reaction) may be magnified or diminished by the visibility of the landscape from major viewing routes and key observation points. In the VRM system, thus, distance plays a key part in visual quality management.

A landscape scene can be divided into three basic Distance Zones: **foreground/middleground**, **background**, and **seldom-seen**. Because areas that are closer have a greater effect on the observer, such areas require more attention than do areas that are farther away. Distance Zones allow this consideration of the proximity of the observer to the landscape.

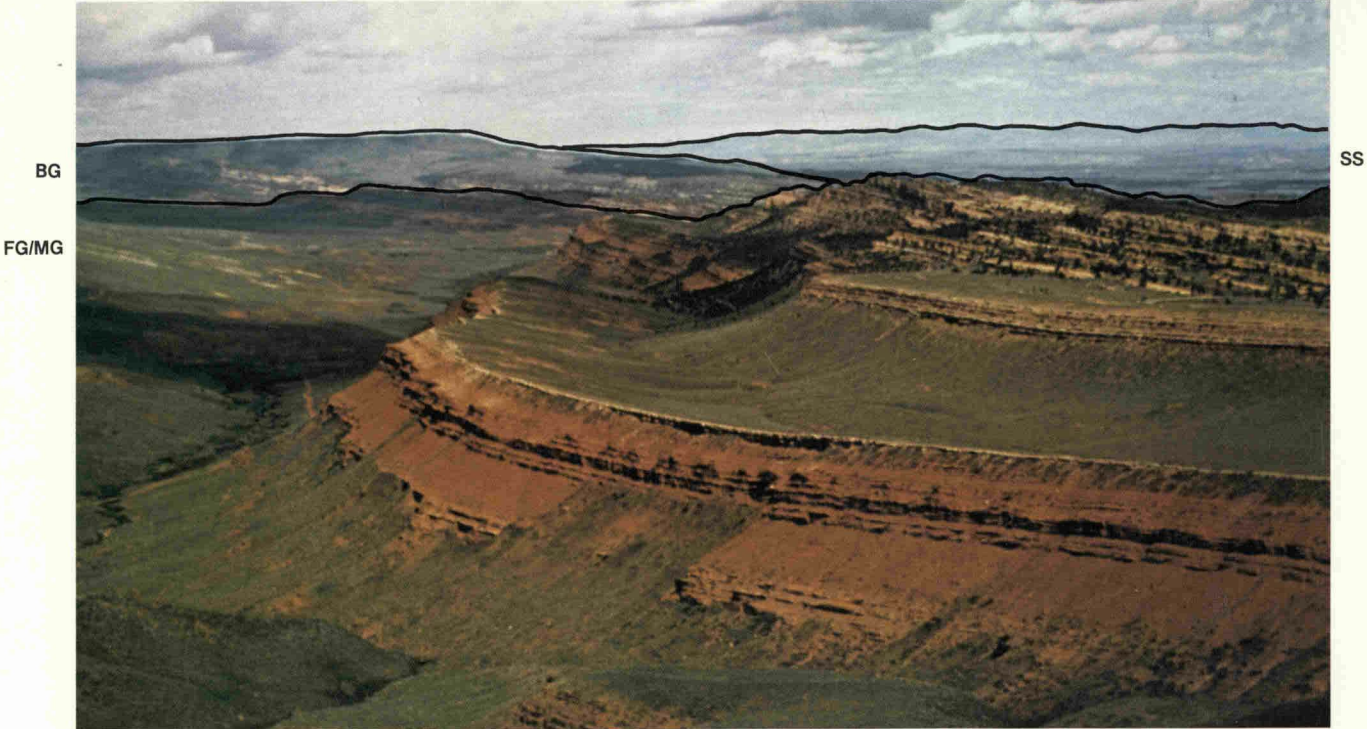
Selection of the key viewing points and accurate assessment of Distance Zones require some judgment. Where several routes exist, what is foreground from one route may be background from another. (The more restrictive designation is used.) Atmospheric conditions may also modify the perception of distance.

For small projects, in-field photographic assessment of Distance Zones is usually sufficient. For large projects, however, or projects that require evaluation from many key viewpoints, an alternative method for generating data is to use a computer graphic modeling technique such as the VIEWIT system.

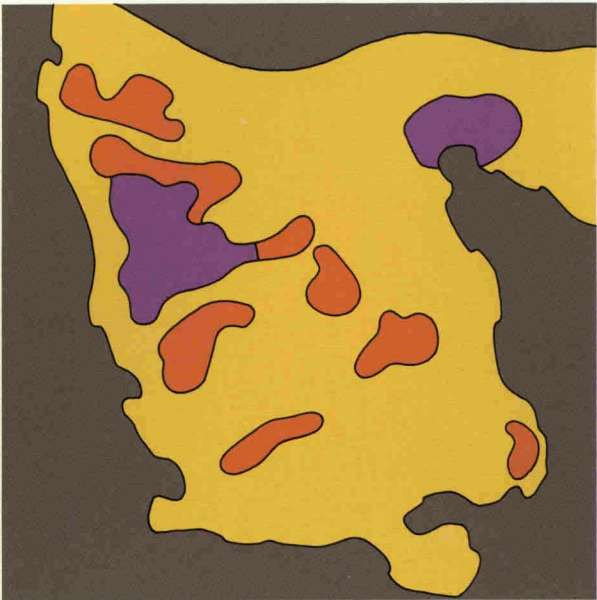
The process culminates in the preparation of a final Distance Zone map.



Distance Zones Example








Distance Zones
FG/MG
BG
SS

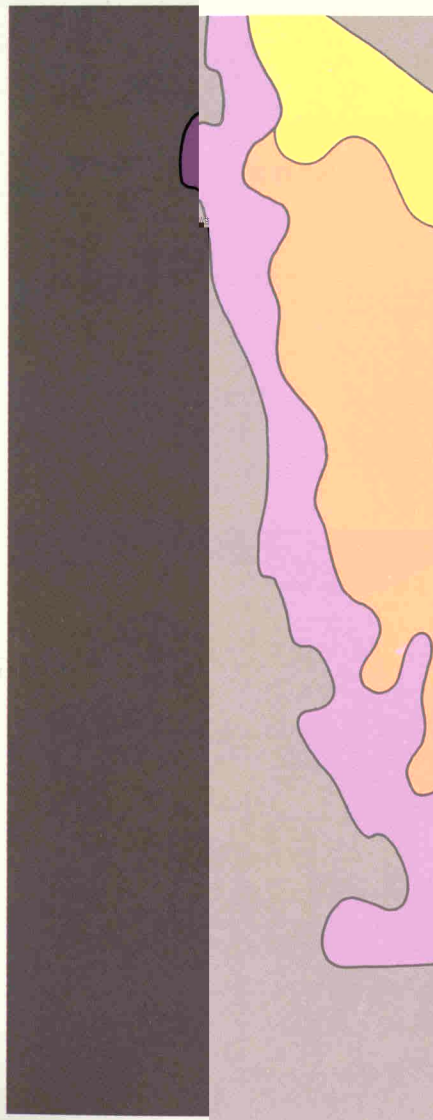


Management Classes

Management Classes describe the different levels of modification allowed to the basic landscape. Class designations are determined by overlay techniques that combine the Quality, Sensitivity, and Distance overlays are used to identify areas with combinations of factors. These areas are then assigned to one of five Management Classes according to predetermined criteria. The resulting map is an important document for all Bureau land decisions, and it is also used to assess the impact of proposed development.

Management Classes

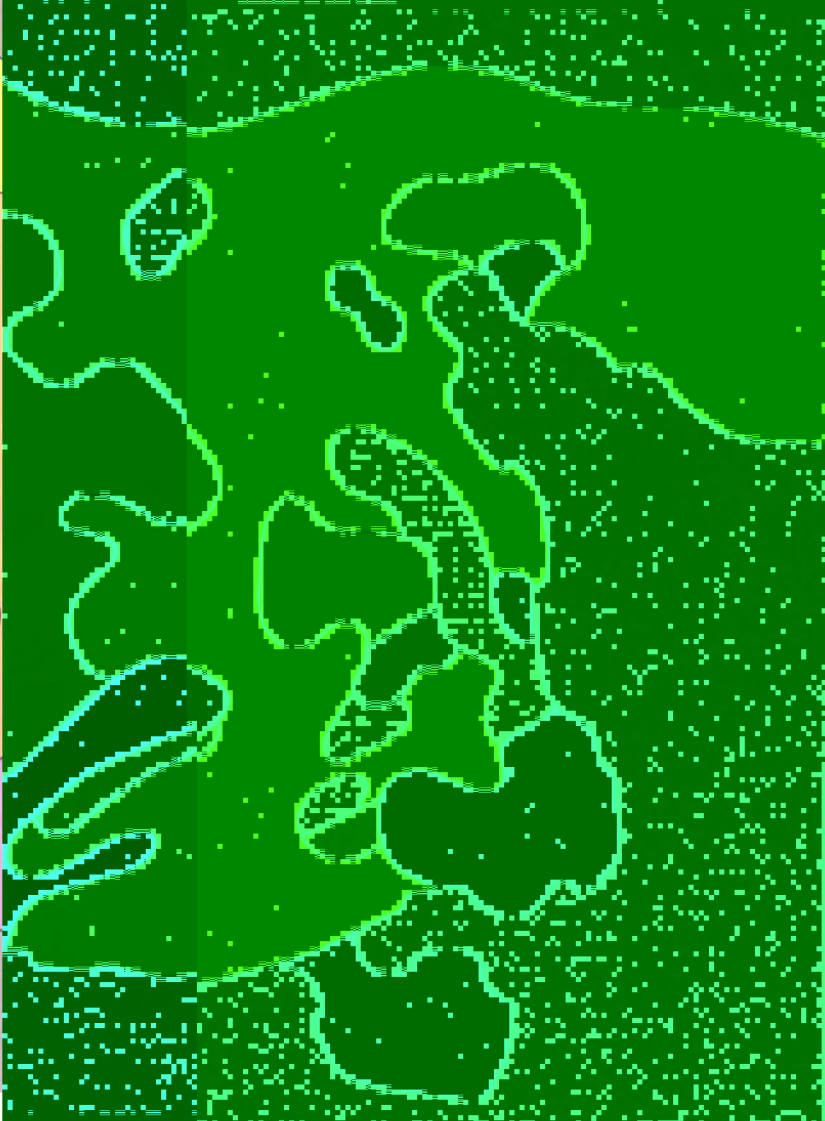
- Class 1 
- Class 2 
- Class 3 
- Class 4 
- Class 5 



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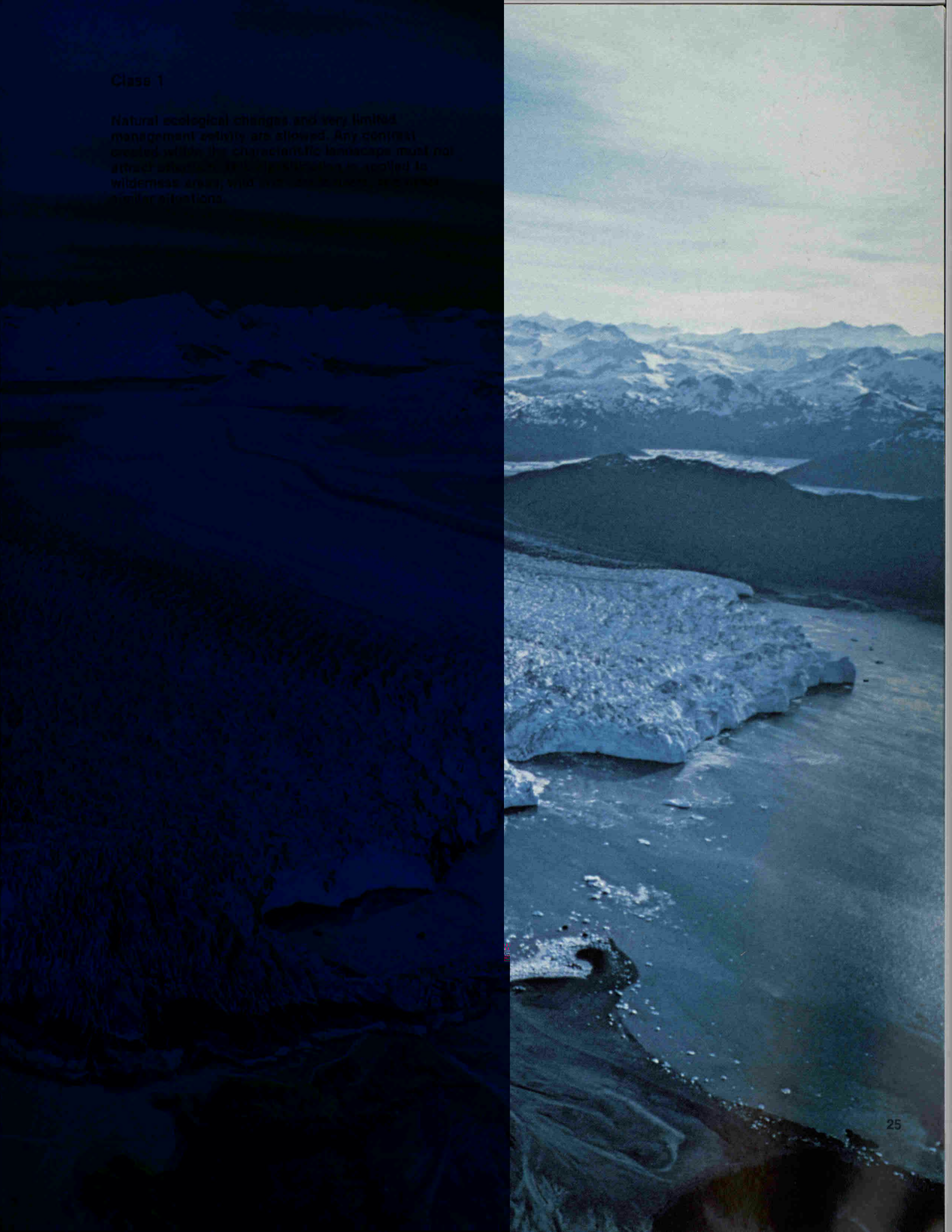
Management Class	Class 1	Class 2	Class 3	Class 4	Class 5
Class 1	1	1	1	1	1
Class 2	2	2	2	2	2
Class 3	3	3	3	3	3
Class 4	4	4	4	4	4
Class 5	5	5	5	5	5

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Class 1

Natural ecological changes and very limited management activity are allowed. Any control created within the characteristic landscape must not attract attention. This classification is applied to wilderness areas, wild river basins, and other similar situations.



Class

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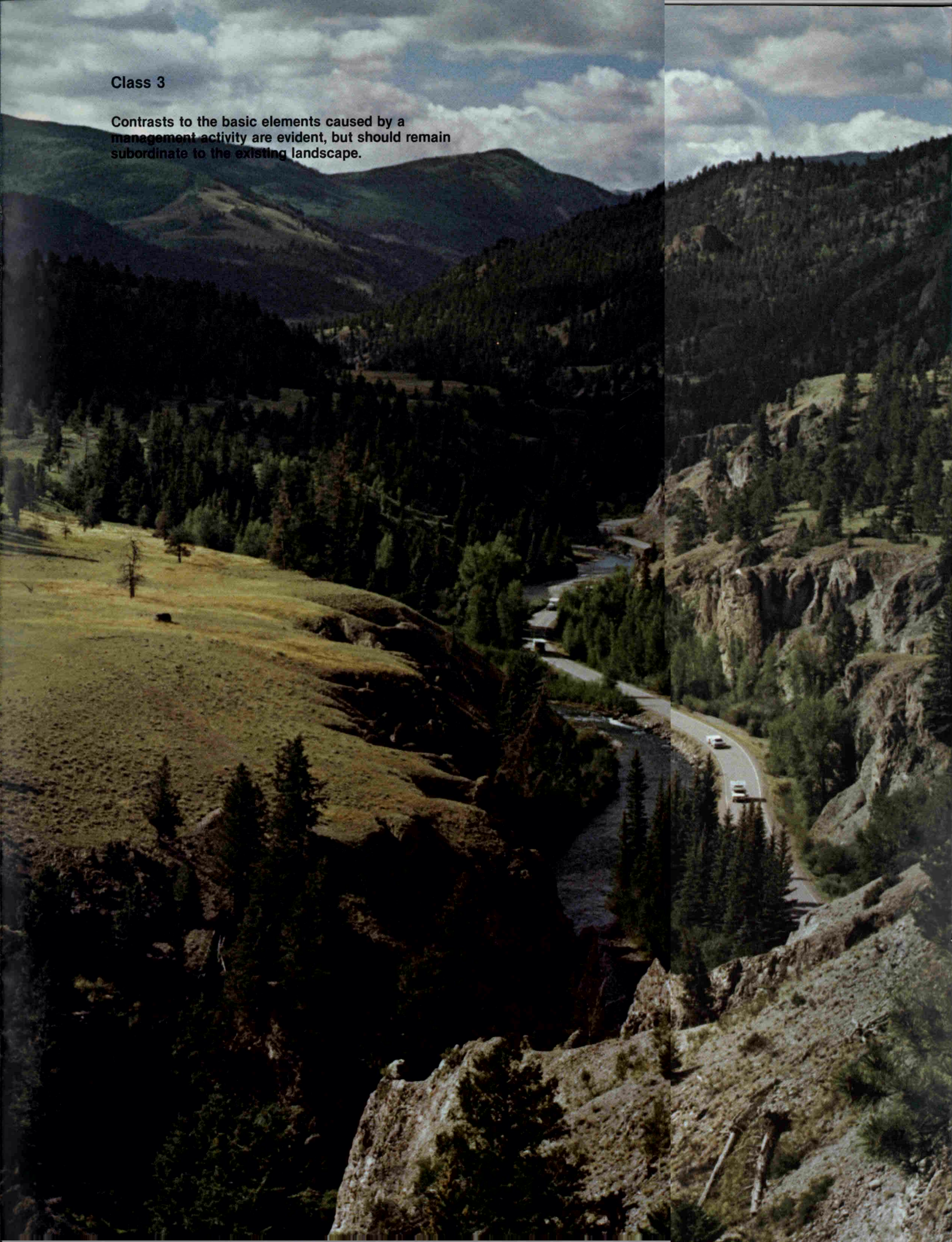
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color, shape, line, and texture. Basic elements (form, line, color, shape, texture) should be used to describe the management activity. Control measures should be clearly stated. The landsc

ist not attend to the

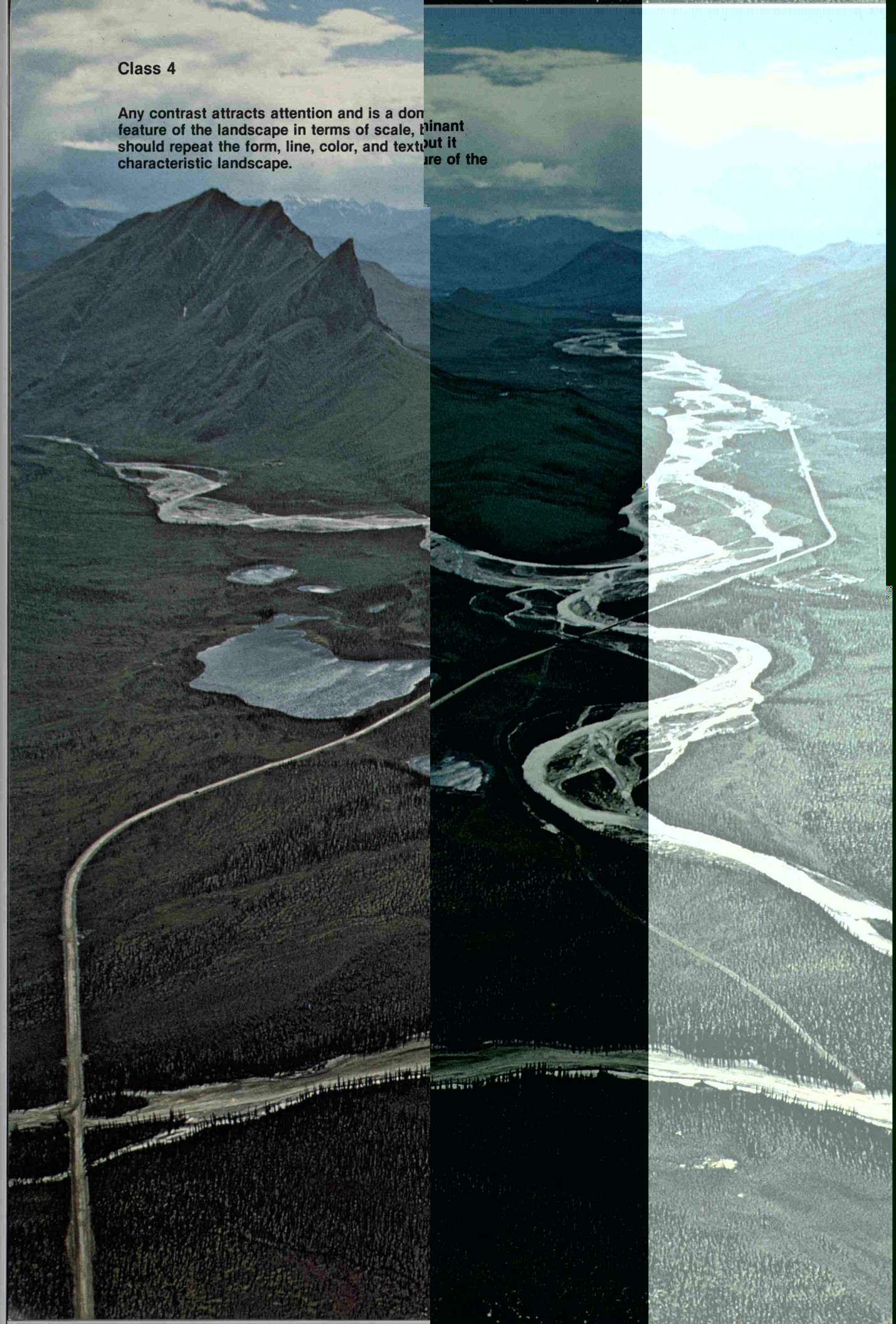
Class 3

Contrasts to the basic elements caused by a management activity are evident, but should remain subordinate to the existing landscape.



Class 4

Any contrast attracts attention and is a dominant feature of the landscape in terms of scale, form, line, color, and texture. It should repeat the form, line, color, and texture of the characteristic landscape.



Class 5

The classification is applied to areas where the natural character of the landscape has been disturbed to a point where rehabilitation is needed to bring it up to one of the four other classifications. The classification also applies to areas where there is potential to increase the landscape's visual quality. It would, for example, be applied to areas where unacceptable cultural modification has lowered scenic quality; it is often used as an interim classification until objectives of another class can be reached.



Contrast Rating

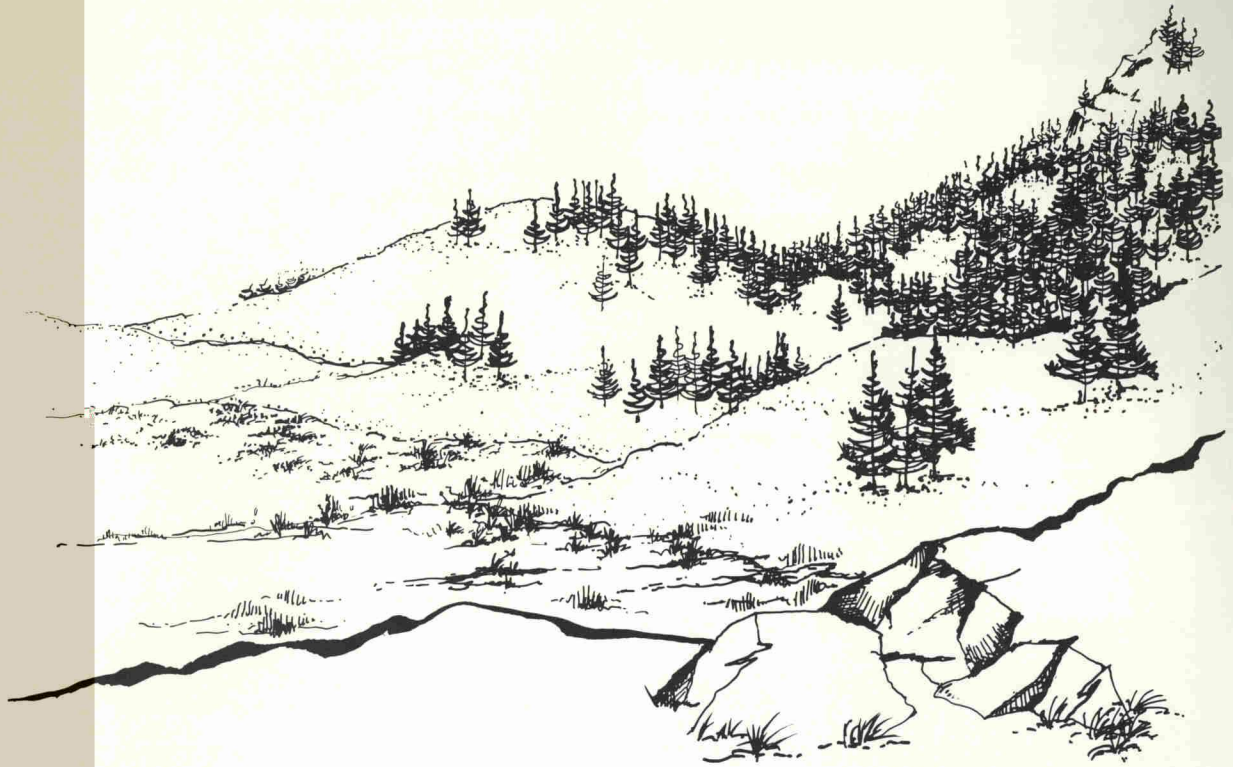
To evaluate specific proposed projects, the Contrast Rating System is used to measure the contrast between the proposed activity and the existing landscape. This score is compared to allowable levels of contrast for the Management Class. The comparison will determine if mitigation is required to reduce visual impacts.

The process first segregates a landscape into major **features** (land/water surface, structures) and each feature, in turn, is broken down into **elements** (form, line, color, texture). Each element is assigned a weighted value based on its importance in the landscape (*form* = 4, most important; *texture* = 1, least important).

The Contrast Rating compares the proposed project with existing conditions element by element, according to the degree of contrast. *strong*, 2 = *moderate*, 1 = *weak*, 0 = *none*. The element value multiplied by the degree of contrast indicates the magnitude of visual impact. For example, the *form* (4) of a proposed structure would have a *moderate* (2) contrast with a flat landscape. Therefore, the *form* category of land/water surface would produce a Contrast Rating of 8 (4 x 2).

Features	Element	Element Weight	Contrast Degree	Contrast Rating	Score for Each Element
Land/ Water Surface	Form	4	Strong	2	8
Vegetation	Line	3	Moderate	1	3
	Color	2	Weak	1	2
Structure	Texture	1	None	0	0
Total					13

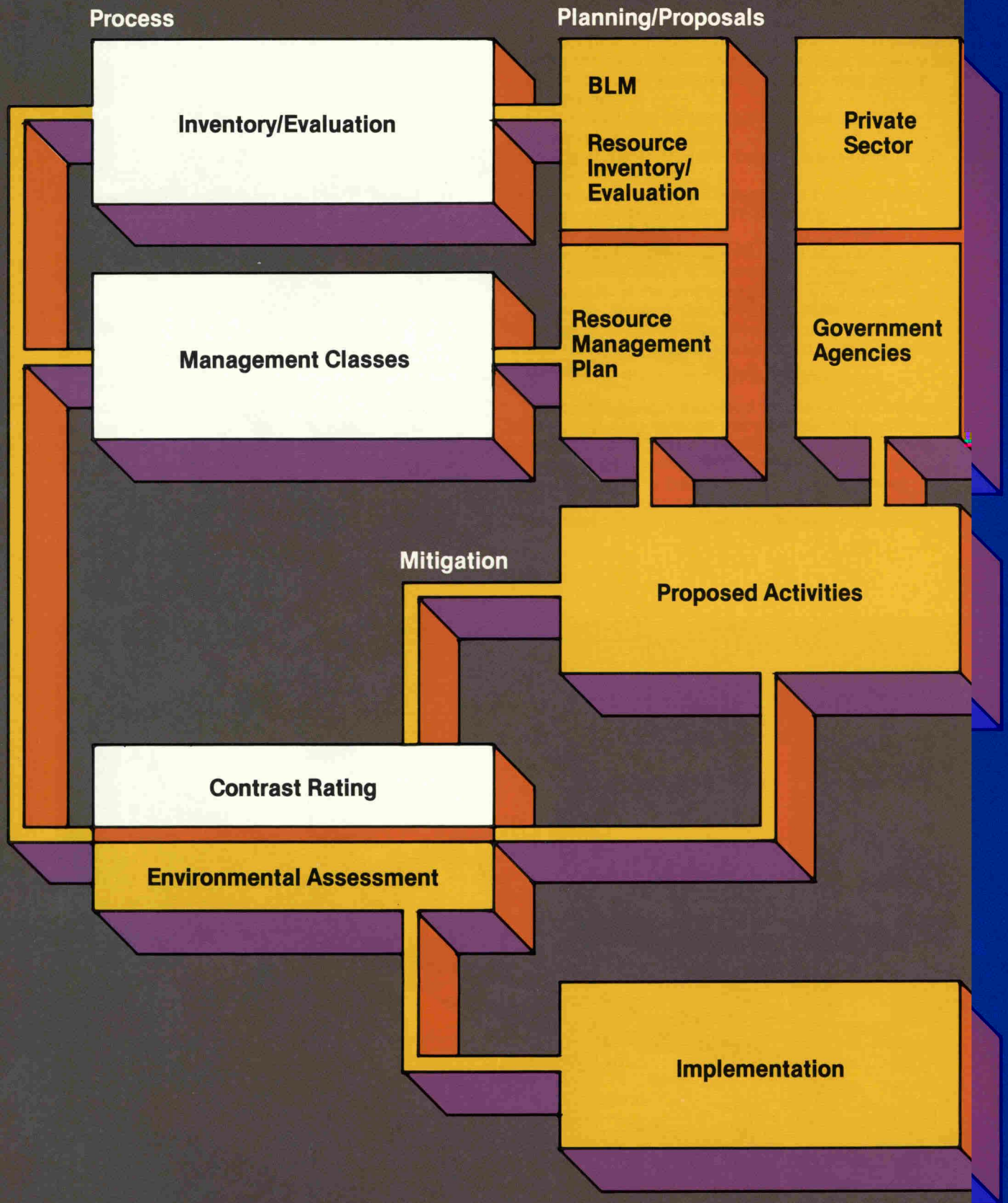
Proposed Site



Simulated Activity



Integration



Visual Use Planning

Visual Use Planning is a process that identifies and evaluates the potential visual impacts of proposed projects and develops strategies to avoid, minimize, or compensate for those impacts.

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Assessment

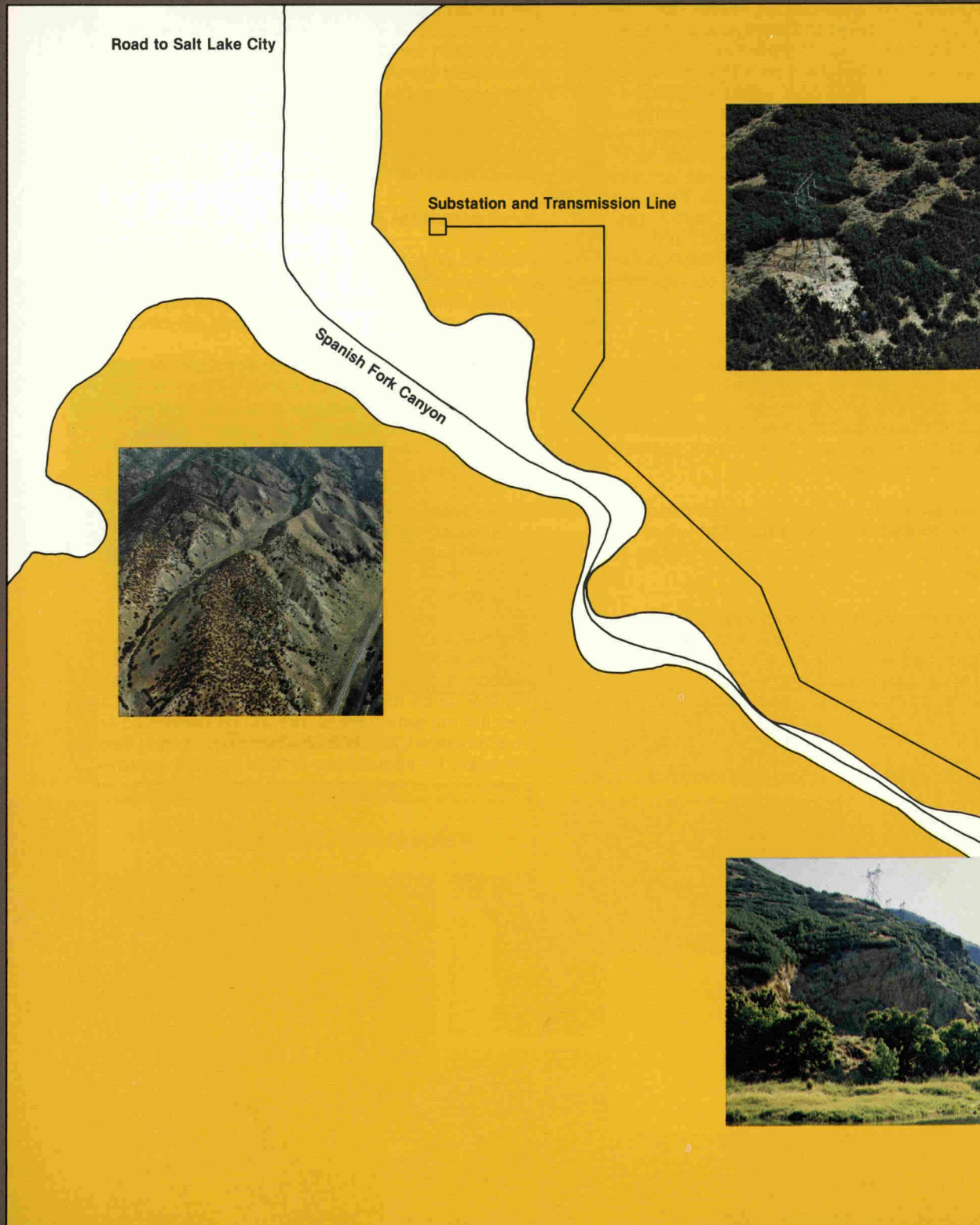
Visual impact is required for all projects proposed in areas where the depth of analysis may be directly related to the project.

The interdisciplinary team of designers, architects, landscape architects, and planners who have experience in visual assessment.

of the existing environment— including Quality, Sensitivity Levels, and VRM Management Classifications, and proposed action, and modifications—including for mitigating visual impacts and conclusions—including VRM actions.

The Contrast Rating System is a tool for assessing the impact of proposed projects. The Contrast Rating score does not meet the designated Management Class, and measures will be developed and implemented to ensure that the project meets the requirements of the Contrast Rating System.

Application



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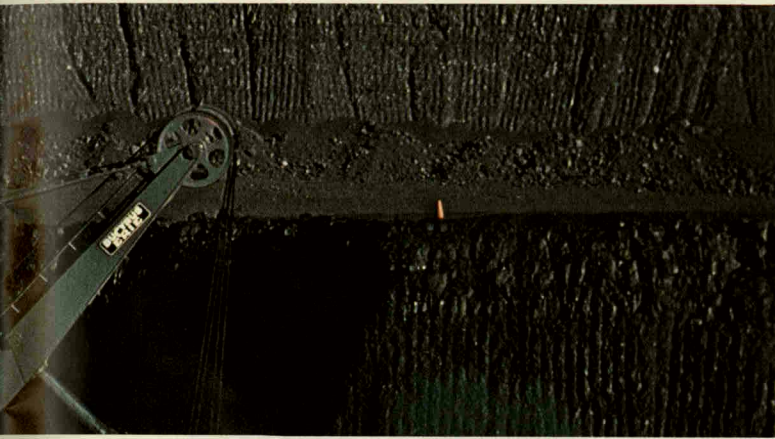
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Exploration Specific exploration techniques vary with the energy source and the terrain. In general, however, the techniques include remote sensing, on-site mapping, site clearing, drilling, preliminary excavations, and the construction of retention ponds, access roads, and temporary facilities.



Production Producing energy calls for the construction of electrical generating plants, hydroelectric dams, pumping stations, petroleum tank farms, and many other major facilities. Solar facilities may use acres of solar reflector fields. Geothermal plants produce steam, coal plants produce smoke.





Extracting Techniques will vary. Extracting petroleum, for example, can require extensive well and pump facilities; extracting coal can require large strip-mine operations. Permanent structures are usually built during this phase as well. Because of overburden removal, coal storage in large piles, and construction activity for pipelines and maintenance roads, major modification of landforms often occurs.



Transportation Transporting energy from the often remote locations where it is produced to the consumer requires pipelines (for oil, gas, and coal slurry) or transmission lines. Construction of these facilities as well as the development of extensive maintenance and access roads to such facilities does impact the environment over long linear corridors running for hundreds of miles.

Mitigation Measures

Negotiation and consultation among representatives from Utah Power and Light, the Bureau of Land Management, and the Forest Service produced some specific mitigation measures acceptable to the agencies as well as the general public.

The towers along the Huntington/Camp Williams line were painted in varying colors of matte-finish pigments specially developed to blend with the dark natural landscape. The transmission line conductor was dulled at the factory or was painted on site to decrease its reflectivity and to lessen its visibility.

Where the line passed through areas of special scenic interest seen from roads or recreation sites, the towers were spaced at broad intervals of up to 1600 feet so that fewer towers were needed. Where the line moved across a mountain face readily visible to the public, it was placed high on the mountain, well above a lower existing line. Helicopters delivered towers and construction equipment to the mountain-side so that access roads did not have to be built, and vegetation was cleared only in the immediate vicinity of each tower site. Utah Power and Light used graphic simulations to pre-position towers and lines where they contrasted least with the landscape, screening them with trees, hiding them behind mountain ridges.

Proposed Activity



Results

The cooperative efforts of Utah Power and Light, the Bureau of Land Management, and the United States Forest Service were successful, both economically and aesthetically.

By using graphic simulation techniques to convey its proposals for the reduction of visual impact, Utah Power and Light was able to move through the approval process much more quickly than would otherwise have been possible. The result was considerable savings of time, which, for a company undertaking a large construction project, also means considerable savings in interest costs on money borrowed for construction.

By putting VRM to work, public agencies were able to present their requirements for the mitigation of visual impact in the objective terms of an integrated assessment system.

There have been, and will be, other examples of how VRM can be put to effective use. In the years to come, the continued application of VRM throughout the Bureau of Land Management should bring the Bureau and the public whom it serves ever closer to our national goal of continued productivity and the provision of aesthetically pleasing surroundings for all Americans.

Successful Modification



Bureau of Land Management

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As the Nation's principal conservation agency, the U.S. Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

